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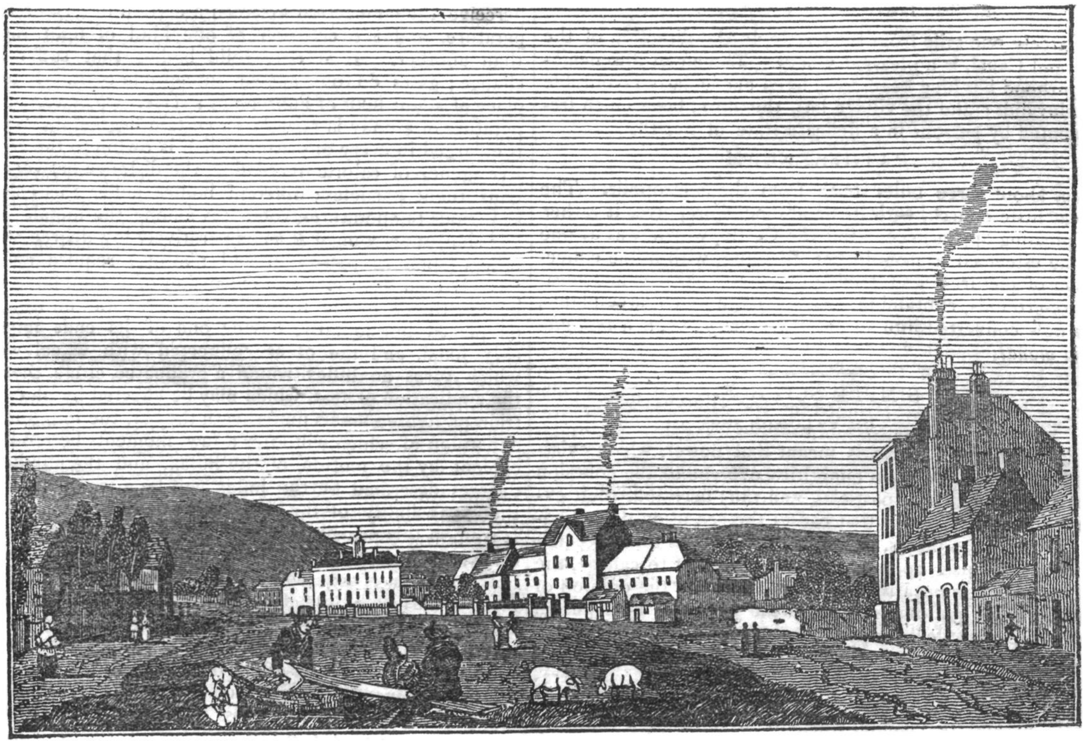
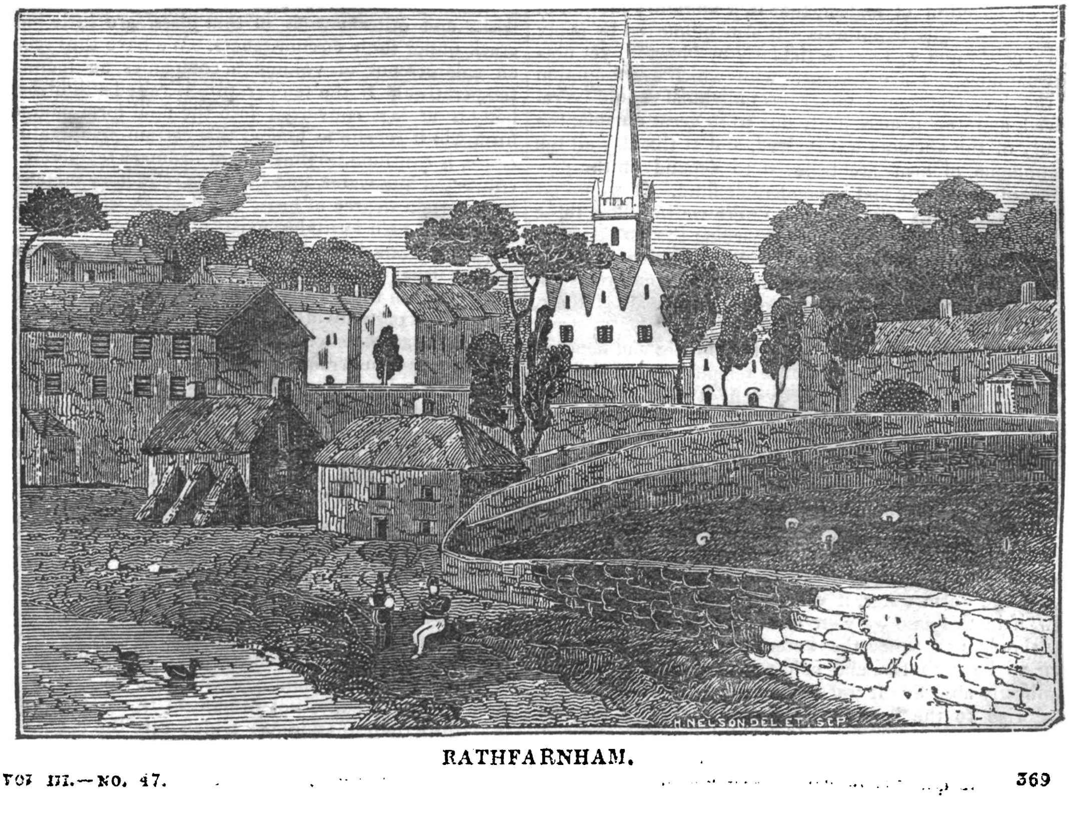


HAROLD'S-CROSS.


H. NELSON DEL. ET SCP.

RATHFARNHAM.

VILLAGES ROUND DUBLIN.

Although the villages surrounding our city have little in their appearance to attract particular attention, still as lying in the immediate vicinity of the metropolis, we may suppose them to have an interest, not only to the citizen strolling through them in his morning or evening rambles, but to the stranger who, coming from a distance, may be anxious to visit and view our immediate suburbs. The three villages represented in our present number lie to the south of the city.

HAROLD'S CROSS,

Scarcely one mile from the Castle, in the direction of the Grand Canal, is a pleasant village. The air in this neighbourhood has long been considered particularly favourable to invalids; and the village has, therefore, been much frequented by persons in a delicate state of health.

RATHFARNHAM

Lies about three miles south from the metropolis. The neat little church, with its handsome spire, gives it rather a pleasing appearance. But the Castle, which was at one time esteemed a magnificent building, with a fine collection of pictures, and having extensive gardens and pleasure-grounds, containing many foreign and scarce plants, is now converted into an extensive *dairy!—Sic transit gloria mundi.*

SIMPLE SCIENCE.

ON CALORIC.

By the term Caloric is meant that power, which existing in bodies in certain quantities, overcomes the cohesion of their constituent particles, and thus occasions their expansion;—it is it also that causes the sensation denominated heat in animals, as its abstraction does that of cold; hence it would appear, that with respect to caloric, the term cold, is a negative expression. It was the opinion of the ancient philosophers, that the cause of heat was an extremely subtile fluid, pervading all nature, which opinion, was universally adopted until the time of Bacon, when that eminent man observing that an increase of temperature always attends those circumstances, viz. mechanical friction and percussion, which tend to excite a vibratory motion in the particles of bodies, conjectured that all the phenomena of heat might be dependent on a mere condition or affection of matter, that is, a vibratory motion of its particles; this hypothesis was also supported by many other celebrated writers, particularly by Newton, yet notwithstanding the acquiescence with which every opinion of the last mentioned illustrious individual should be received, and the respect justly due to so great a name, the theory of the ancients was revived, and at this day all the phenomena of heat are believed to depend on the presence of an elastic and imponderable fluid. It would far exceed the limits of this article were we to follow those philosophers in their inquiries regarding the actual existence of a matter of heat, and it would be moreover nearly useless, for caloric, however unknown in its nature, is not so in its effects, and it is to attain a knowledge of these, that strict philosophy should aim.

As sensation varies in different individuals, and depends much on the relation between the temperature of the sentient organ and that of the body felt, it is evident that it cannot be an adequate measure of the absolute quantity of caloric in any body. Sensations are also much influenced by immediately preceding impressions; thus if one hand is immersed in a vessel containing pounded ice, while the other is plunged in one containing hot water, and both hands be subsequently placed in water at the ordinary temperature; this, to the hand which was immersed in the ice, will give the feeling of heat, while to the hand which was in the warm water, it will give the sensation of cold; now, if in this case we were to depend on our sensations, we should pronounce the water at the ordinary temperature, to be both hot and cold at the same time, which is manifestly absurd. It was circumstances of this kind that gave rise to the invention, and construction of the thermometer, an instrument by which the difficulties, and erroneous conclusions arising from sensation are obviated, and the absolute quantity of caloric existing in bodies, ascertained with a degree of exactness hitherto unknown. The effects of the action of caloric on bodies, are enlargement of volume, fluidity, and vaporization; also when it acts with intensity on certain substances, another effect is produced, termed ignition. It would appear that during this last mentioned change the red rays only of the spectrum are at first given out; but gradually, and as the temperature is still more augmented, all those rays whose union produces white light are emitted, constituting what is called the stage of incandescence. With the nature of this phenomena we are entirely unacquainted; we are not able to perceive the connection between a certain degree of temperature, and the emission of one kind of light, rather than another. It is only solid bodies that suffer this change; gases do not appear susceptible of it. It takes place at about 800° of Fahrenheit's scale. When the temperature of a body is raised to a certain degree, its volume is enlarged in every direction, which is owing to the repulsive agency of caloric increasing the distance between its constituent particles; different bodies suffer this change at various temperatures, some (as among the metals lead and zinc) undergoing it at a comparatively low degree, while others (such as palladium and platina,) require an extremely high degree. The expansion of a solid body may be illustrated in the following manner. Let an iron bar be placed horizontally, having one of its ends immovably fixed, and the other connected with wheel work, which turns an index round a graduated circle, then on the application of heat, which may be effected by placing a train of lighted tapers underneath the bar, the longitudinal expansion of which will after a few moments be rendered evident by the motion of the index, and the number of degrees described by the index will be a true measure of the expansibility of the body, from a given temperature. It is upon this principle that we are enabled to explain the cracking of glass vessels containing hot fluids; thus when boiling water is poured into a glass vessel, the innermost layer or surface of the glass becomes heated and expands; this expansion is resisted by the outermost layer of the glass, which, still retaining its ordinary temperature and dimensions, does not yield sufficiently soon to the increasing volume of the innermost, and consequently cracks; hence, the thinner the glass is the less danger is there of this accident occurring; for in this case, both surfaces or layers, are heated in nearly the same time, and consequently expansion must proceed uniformly in both: thus Florence flasks and other vessels of thin glass, are little liable to crack under these circumstances. We have thus seen how an enlargement of volume accompanies an increase of temperature. If the temperature is raised still higher, the body is at last converted into the fluid form, and in this form will it remain as long as that certain temperature, its cause, is continued; thus ice, at ordinary temperatures, is converted into water, and the most refractory metals fused by a certain degree of heat. Quicksilver, which in Siberia, and other high latitudes, exists as a permanent solid, is in our comparatively warmer climates a permanent fluid. The change from mere expansion to fluidity, does not appear to depend on the greater increase of distance between the constituent particles of bodies; it seems rather to be owing to a new arrangement of these particles, with regard to each other—an arrangement in which they are allowed a greater freedom of motion. When the temperature is augmented beyond that point which is necessary to the existence of a body in the fluid form, the distance between its constituent particles is further increased, it becomes a gas or vapour, and is highly elastic; thus water at 212 becomes steam—quicksilver undergoes this change at 656°; and either at a few degrees above the ordinary temperature. We have now seen that the state of aggregation of bodies, viz. whether they shall exist as solids, fluids, or gases, is entirely dependent on the temperature to which they are exposed. The diffusion of caloric takes place in two different ways, by slow communication, and by radiation; the heat we feel on touching a heated body, is occasioned by slow communication, while that experienced from a similar body, not in immediate contact with us, is the result of radiation, in which case the calorific rays, darted from the surface of the heated body, produce the effect. When a body, at a high temperature is placed in